

c) *depositing a conductive layer over a surface of said second layer of Ta, wherein the substrate temperature during said conductive layer deposition and in subsequent processing steps is less than about 500 °C.*

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12. (Once Amended) The method of Claim 8, wherein said combined barrier layer and wetting layer structure is used in an interconnect structure, and wherein the thickness of said TaN_x layer ranges from about 50 Å to about 1,000 Å and the thickness of said Ta layer ranges from about 20 Å to about 500 Å.

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27. (Twice Amended) A method of producing a copper-comprising contact structure comprising a combined TaN_x/Ta barrier layer and wetting layer, and an overlying copper layer, wherein the Cu <111> crystallographic content of said overlying copper layer is at least 70 % of the Cu <111> crystallographic content which can be obtained by depositing said copper layer over a pure Ta barrier layer which is about 300 Å thick, said method comprising the steps of:

a) depositing a first layer of TaN_x having a thickness ranging from greater than about 10 Å to about 300 Å;

b) depositing a second layer of Ta having a thickness ranging from about 5 Å to about 300 Å over the surface of said first layer of TaN_x; and

c) depositing a third layer of copper over the surface of said second layer of Ta, wherein at least a portion of said third layer of copper is deposited using a physical vapor deposition technique, and wherein the substrate temperature at which said third layer of copper is deposited is less than about 500°C,

wherein at least a portion of said first layer, or said second layer, or said third layer, or a portion of a combination of said layers, is deposited using ion-deposition sputtering.
